



**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

National Ocean Service

Office of Ocean Resources Conservation and Assessment

Hazardous Materials Response and Assessment Division

Coastal Resources Coordination Branch

c/o USEPA Waste Division

345 Courtland Street

Atlanta, Georgia 30308

404-347-5231

20270

4 9 0121

MEMORANDUM

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Date: 16 June 1993

To: Cheryl W. Smith, Remedial Project Manager, South Superfund Remedial Branch, USEPA, Region IV

From: Waynon Johnson
Coastal Resource Coordinator, NOAA, Region IV

Subject: Olin Corporation Site, McIntosh, Alabama

Review of the subject document for the Olin Corporation McIntosh Plant Site, McIntosh, Washington County, Alabama was conducted by technical representatives of the Natural Resource Trustee for the National Oceanic and Atmospheric Administration (NOAA), U. S. Department Of Commerce. The following comments are offered for your consideration.

Document Reviewed:

1. *Draft Feasibility Study Report, McIntosh Plant Site, Olin Corporation, McIntosh, Alabama, May 1993.*

Site Background:

The Olin Chemicals site consists two operable units: Operable Unit 1 (OU 1) is the active production facility and the upland area of the Olin property; Operable Unit 2 (OU 2) is the Olin basin, the floodplain within the Olin property line, and the wastewater ditch leading to the Olin Basin and the Tombigbee River. Located north of but adjacent to the Olin site is the Ciba Geigy site, also designated as a National Priorities List site.

The contaminants of primary concern to NOAA is mercury, hexachlorobenzene (HCB), and DDT and its metabolites (DDTr) in the sediments of the Olin Basin, including the basin (lake), the ponded areas to the north, and the wetlands. Mercury was detected in virtually every surficial sediment sample collected; the Effects Range-Low (ER-L) value of 0.15 mg/kg was exceeded at every station with detectable concentrations of mercury. The highest concentration of mercury in surficial sediments (290 mg/kg) exceeded the ER-L for mercury by a factor of over 1,900. Detectable concentrations of mercury exceeding the ER-L were found as deep as eight feet in the sediments of the basin. Results indicated that mercury concentrations generally exceeded 10 mg/kg throughout the Olin Basin, as well as in the ponded areas. The wetlands, as yet, have not been sufficiently examined for contaminant levels and distribution.

HCB was detected in 10 of 21 surficial sediment samples, and in one of the six subsurface core samples. The maximum concentration (810 mg/kg) found exceeds the upper Apparent Effects Threshold (AET) value 0.23 mg/kg by a factor of over 3500. HCB was found to occur in sediments primarily in the southern portion of the basin.



DDT is not considered a site-related contaminant, and its presence in media collected from the Olin Basin most likely is due to contamination from the Ciba-Geigy Corporation McIntosh plant where DDT was manufactured. DDT or one of its metabolites was reported in all 21 surficial sediment samples, and four of the six sediment core samples. The highest reported concentration of DDT, 4 mg/kg, was in sediments from the basin. This concentration is 4,000 times the ER-L value of 0.001 mg/kg. Although the presence of DDT_r poses a substantial threat to NOAA trust resources, mercury and hexachlorobenzene pose a threat at least equal if not greater in magnitude. The risk from mercury and hexachlorobenzene alone would be sufficient to drive efforts toward site remediation. However, regardless of the source of DDT, its presence is of concern to NOAA and it should be considered a site-related contaminant for remediation to be protective of aquatic receptors.

Trust species known to occur in the vicinity of the site include a variety of freshwater fish species, anadromous and catadromous species, and estuarine species. Species of primary importance are the anadromous Atlantic sturgeon, Alabama shad, and striped bass, and the catadromous American eel. The endangered Gulf sturgeon also occurs in the area. Although the Tombigbee River is the habitat of primary concern to NOAA, the Olin Basin and associated wetlands provide valuable habitat and services important for the production and support of NOAA trust resources. For example, twenty-three fish species were found within the Olin Basin, including several NOAA trust species; Atlantic needlefish, striped mullet, hogchoker, American eel, skipjack herring, and gizzard shad.

Comments:

The remedial alternatives for soils that include excavation and removal of the former landfill/waste material would be the most protective of trust resources; Alternatives F and G1. The Feasibility Study (FS) stated that any of the soil alternatives would be protective of the environment. The FS also stated that the CPC landfill was not a continuing source of mercury contamination. That conclusion is questionable, as mercury was detected in the fill/waste material at concentrations as high as 406 mg/kg. According to the site maps in the FS, the landfill appears to be situated less than 60 m from the outfall to the waste water ditch that leads to the Tombigbee River, so there may be a potential for contaminants to migrate into the ditch and ultimately the river. Excavation and removal of the contamination is therefore recommended.

Mercury in groundwater consistently has been detected in at least three wells at concentrations above 100 µg/l. The maximum concentration of mercury detected during the RI was 146 µg/l in the vicinity of the CPC Landfill. The statement that because mercury was not detected in the sand above the aquifer, the landfill is not the source of mercury in groundwater is not convincing and it should be removed from the document. Remedial Alternative C3 would provide the most protection for aquatic resources. In addition to the existing CAP, vertical and horizontal extraction wells would be placed in the vicinity of the CPC Landfill, and near the weak brine pond area where a mercury-contaminated dense brine layer exists at the base of the Alluvial Aquifer. Alternative C3 would be more protective than Alternative A because it would: 1) address additional areas; 2) include carbon adsorption for mercury removal; and 3) accelerate site cleanup. The ARAR for mercury (2.0 µg/l) is greater than ten times the chronic Ambient Water Quality Criteria (AWQC) of 0.012 µg/l, which is NOAA's screening guideline for groundwater target cleanup levels. However, under available technology for metal removal, it may be difficult to obtain lower concentrations.

A major concern regarding the conclusions of the feasibility study is that no appreciable risks were identified from contamination in the sediments, and that a "no action" alternative for cleanup of sediments would be considered protective. It is NOAA's view that these conclusions are not

supported by past studies and are in conflict with the very high concentrations of mercury observed within the Basin sediments. As discussed previously by NOAA, data from the benthic invertebrate study and the fish tissue analyses alone indicate that biota have been exposed to site-related contaminants at levels known to produce adverse effects.

- The presence of mercury in the sediments in the basin, ponds, and floodplain has been well established, but information has not been collected regarding the toxicity or bioavailability of mercury from these sediments. Previous studies have shown that sediments contaminated with mercury at levels far less than those observed in the Olin Basin produce significant toxicity to a variety of aquatic organisms. The observed tissue residues of mercury from aquatic organisms taken from within the Olin Basin indicate that mercury is bioavailable and has bioaccumulated to potentially harmful levels.
- Mercury was found in whole body residues of fish in the basin as high as 0.91 ppm (Olin data) and 0.93 ppm (Ciba Geigy data). Past studies have associated such tissue levels with adverse effects in aquatic organisms. It also exceeds the proposed criteria for health and environmental protection of 0.5 ppm in whole body fish tissues for the Stauffer site, downstream of the Olin site. Filet residue levels as high as 2.2 ppm far exceed the FDA action level of 1.0 ppm.
- Mercury and other site-related contaminants reasonably can be presumed to have been transported downgradient from the site and deposited in the sediments of the Tombigbee River during past operations, and such transport likely is continuing under current conditions during flood events. Mercury transported under flood conditions may be highly bioavailable due to conditions conducive to mercury methylation.
- As discussed above, DDT should be designated a site-related contaminant and included in any decisions for site remediation. Because of dual exposure conditions that exists at the site, additive or synergistic effects may be introduced in the toxic response of exposed organisms.

In summary, the primary concern of NOAA regarding the FS is that the potential threat to trust resources from contamination present in OU-2 sediments was disregarded. It is NOAA's view that sufficient data have been collected to establish that significant ecological risk exists as a result of contamination within the Olin Basin (basin, ponded areas, wetlands); therefore the "No Action" Alternative for OU 2 is not protective of human health and the environment. However, there is insufficient data to qualitatively or quantitatively characterize the ecological risk posed by the site. Although the data establish that exposure is occurring, the various contaminant sources within the Basin, and their bioavailability and biological effects, have not been sufficiently examined to assess the risk posed by the site. Consequently, it is NOAA's recommendation that further studies be conducted that will provide data sufficient to perform an ecological risk assessment that will provide a basis adequate for the development and selection of remedial alternatives protective of trust resources.

Thank you for providing NOAA the opportunity to comment on this site, and for keeping me apprised of ongoing activities. I will be happy to discuss any questions or comments pertaining to this review that you may have. My telephone number is (404) 347-5231.